

## The Three Bells of First Parish Church

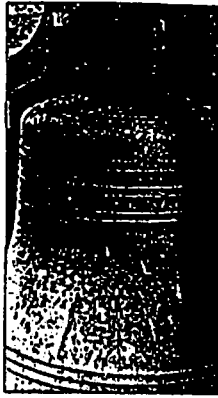
(This is the first of a two-part series. —Ed.)

By JOE SHEA

In the history of the First Parish Church of Duxbury there have been three bells. There is no information about what was used to call the congregation to worship prior to the early 1800s; other churches in New England used conch shells to sound the call, while some used drums. A few might have been able to bring a bell from England but that would have been expensive. At least one church used the bell off of a pirate ship. In time, around the 1750s, bells were starting to be cast in this country.

### First Bell

During the War of 1812, when a British Man-o-War was lying off the Gurnet, there was concern that the British would come ashore and attack the fishing fleet. The defense plan had watchers on Captains Hill and the Gurnet, who if need be would first set a tar barrel afire then go to the church (which was also the meetinghouse) and



The present bell at First Parish weighs 1,700 pounds and was cast by Colonel George Handel Holbrook. The Revere Bell is lost without a trace.

affluence and need indicated.

### Revere Bell

In 1819 Paul Revere and Son cast an 804-pound bell for the Town of Duxbury. Paul Revere left the bell casting business about 1811 and died in 1818, but his son continued in the foundry business for a few years. The only

documentation we have of that bell is a shipping invoice. The Third Meetinghouse went through a significant expansion in 1809 and for the first time included a belfry. That belfry, located on the cemetery side of the building, was likely the destination of the bell. The tongue, also known as a clapper, weighed 21 pounds.

Stored in the vestibule of the present church sanctuary is a wooden yoke for supporting a large bell. It has long been thought that it was part of the bell mechanism in the Third Meetinghouse. In taking detailed measurements

and comparing them with details from the White Chapel Foundry in London, I have concluded that the yoke would have been the correct size for an 804-pound bell. There is no evidence of counterweights for balancing a swinging bell. In their absence it would be difficult to swing that bell by pulling on a rope unless the center of balance was accurately determined. I propose that the bell could have been rung by pulling the clapper back and forth by a short rope. This would cause the clapper to strike the sound bow in just the right way.

The sound bow is an area only a few inches wide around the circumference of the bell. If you could remove the sound bow it would be ring-shaped, thus the sounding of the bell was the "ringing" of the bell. It is the only place on a bell that will produce the desired tones. The sound bow is located a few inches above the bottom rim on all English style bells. Hitting the bell in any other place will produce anything from a dull thump to a discordant note.

Another artifact stored at the church is a hammer for tolling a church bell. This hammer has a pivot point that suggests it was mounted on the base frame and struck the bell on the outside on the sound bow. The balancing of the hammer would allow steady, even, tolling of the bell. This configuration can work with either a swinging or stationary bell as long as the bell is not in motion at the time. When a bell is swinging and the tongue clapper is striking both sides of the sound bow it is said to be pealing.

When the bell is either not moving or moving very slowly, producing a slow rhythmic striking of the sound bow, it is said to be tolling. Tolling usually reflects sadness and was often used to announce a death or burial. The First Parish bell will still be tolled on request.

In 1841 a new structure, more reflective of the community's economic condition was built. Records suggest that the Revere Bell may have been installed for a time in the fourth church, but it has been lost to the mists of time. We can find no record concerning its fate.

Joe Shea is a long-time member of First Parish Church.

Next week: the 1,700-lb. Holbrook Bell.

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ring the bell. Unsure that it would work, one watcher "tested" the system. It worked quite well, to the displeasure of the alarmed citizenry that gathered in response.

We have no information on that bell, but it was loud enough to sound the alarm. Remember that it was a quieter world back then, and many people spent a lot of time outdoors. It is likely that the first bell weighed considerably less than the ones that followed. I speculate it was in the 200-600 pound range. The story of church bells seems to be one of steadily increasing size and weight as

## The Bells of First Parish

(This is the second of a two-part series. Last week described the First Bell and the Revere Bell. —Ed.)

By JOE SHEA

### Holbrook Bell

The present bell was made by Colonel George Handel Holbrook in East Medway and weighs almost 1,700 pounds. It seems likely that consistent with the construction of a much larger church and steeple, the congregation would have sought a larger bell, twice the size of the original. The date was usually cast into the bell with the name of the foundry, but there is no date on this bell. Perhaps Holbrook felt there was not enough room to add the date, given that he used his middle name and added East to Medway. He stopped doing both after a few years. Most likely the bell was cast between 1834 and 1856.

When in full swing the bell exerts tremendous forces on the frame holding it and the steeple around it. Ordinary pealing of the bell puts horizontal forces exceeding 4,200 pounds of stress with each stroke. On those occasions when youthful exuberance and joyful events coincide, the bell can be swung to a near vertical position and even over the top. With the bell in the full swing mode, another 7,200 pounds of vertical force is added. From this you can see that there is a lot more to steeple maintenance than paint. The single greatest threat to the long-term survival of swinging church bells is the over-exuberance of those pulling on the rope.

The First Parish bell is equipped with an automatic electronic bell ringer, which exerts very little pressure on the steeple when it sounds "ships time" throughout the day. The automatic bell ringer was installed in the 1970s in memory of Everett Marston and was replaced with a digital controller in 2003. When the signal is sent to the unit mounted beside the bell, a brass hammer is driven against the outside of the bell at the sound bow.

The clapper is of iron and is mounted on an iron staple cast into the crown (top) of the bell. It is held in the staple by an iron pin on which it swings.



In 1984 a new wooden wheel was installed, along with a new wooden cradle for the entire assembly. All of the cast iron was sandblasted, primed and painted with epoxy-type black paint.

The tongue weighs 35-40 pounds and is iron. Over time that constant pounding deforms even that mass of iron, and the original round shape deforms into an egg shape. The ball shaped end of the clapper gets beaten into a flat spot on both striking surfaces of the clapper. Gradually that contact point grows from a desired size, about dime sized, to the equivalent of several silver dollars in surface area.

This then impacts the sound bow over a larger area and is not healthy for any bell. This growing impact point is one reason for a bell to change its tone or even to fail. In 1983 the blacksmiths at Sturbridge Village forged the clapper back to the original round shape by heating it to an orange color and pounding it. They pounded away for some time to undo the wear of one and a half centuries.

A danger point in many bells is the staple, which will rust over time. Iron expands 6 percent when it rusts. This expansion is called oxide jacking and can introduce stresses that have been known to crack a bell.

The way a bell was suspended was often a challenge. Many bells were held in place by wrought iron straps that passed through the top of the bell then wrapped around the wooden yoke. Sometime threaded rod was fabricated to hold the bell. The holes drilled in the top of the bell were candidates for oxide

jacking so a better way was needed. Modern technology replaces the iron staple.

The clapper must swing true within the barrel of the bell. This means it should contact the same point on the sound bow every time it strikes. If the staple wears or the clapper pin wears, the clapper can move side to side in sloppy fashion with sufficient strength to eventually self-destruct. In 1984 the Holbrook clapper, after about 150 years of use, had worn away enough metal to have excessive sideways motion. I acquired a special stainless steel alloy from the Statue of Liberty restoration project that is designed to withstand our salt air environment. From it I fabricated and installed two large washers to keep the clapper flying straight.

In 1984 we also turned the bell 180 degrees to balance the impact of weathering, installed a new wooden wheel and gave the whole assembly a new wooden cradle. All of the cast iron was sandblasted, primed and painted with epoxy-type black paint. I installed grease fitting, making the task of lubricating the moving parts easier.

There is something ethereal, and almost spiritual, in the liquid notes that float over forest and farm and the peaceful village. May the bell of First Parish church continue the call to worship for at least another 150 years.

Joe Shea is a long-time member of First Parish Church.